

**EVALUATION OF PERCHLORATE IMPACTS  
TO SOILS AND GROUNDWATER  
NEAR FORMER BUNKER AREA  
RIALTO, CALIFORNIA**

**VOLUME I**

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**OCTOBER 2003**

**SUBMITTED TO:**

**California Regional Water Quality  
Control Board – Santa Ana Region  
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## EVALUATION OF PERCHLORATE IMPACTS TO SOILS & GROUNDWATER NEAR FORMER BUNKER AREAS RIALTO, CALIFORNIA

### EXECUTIVE SUMMARY

Perchlorate impacts to soils and groundwater near the former munitions Bunker Area within the future Unit 5 expansion area at the County of San Bernardino's Mid-Valley Sanitary Landfill (MVSL) were investigated in a three-phase field and laboratory investigation, and through groundwater modeling simulations of the northern Rialto-Colton groundwater basin.

Project work was completed from August 2002 to September 2003 and included excavation of 17 shallow exploratory boreholes to obtain soil samples from stockpiled bunker debris, drilling and sampling within 5 deep exploratory boreholes excavated within and beneath aggregate wash pond sediments in the former Bunker Area, and drilling and construction of 57 temporary and 13 permanent groundwater monitoring wells downgradient of the MVSL and former Bunker Area. While soil test results did not yield significant concentrations of perchlorate or VOCs in stockpiled bunker debris or in soils excavated beneath the wash pond area, the historical use of the Bunker Area for munitions / fireworks storage and disposal, coupled with detection of elevated perchlorate concentrations in groundwater samples collected beneath the ponds area, indicates that soils in the former Bunker Area likely continue to be a threat to water quality in the area.

The lithologic and hydrologic data obtained from the well installation program are generally consistent with results obtained in earlier well installation programs near the MVSL and indicate that the project area is underlain by three aquifers that are separated by laterally continuous aquitards. Owing to regional drought conditions, the upper unconfined aquifer (Upper Aquifer) is largely dewatered. As a consequence, the uppermost groundwater unit encountered for the project was typically the intermediate, partially confined aquifer (Intermediate Aquifer), which overlies the deep, confined Regional Aquifer.

Analytical results obtained for the study indicate that the distribution of perchlorate impacts to groundwater associated with the former Bunker Area is relatively restricted, and does not extend beyond about 4000 feet to the southeast of the now inactive wash ponds. This interpretation is supported by the results of the three-dimensional groundwater model that was developed for the project area, which indicates that a second source for perchlorate impacts must exist to account for the high mass load of perchlorate measured in samples obtained at West Valley Water District Well No. 22 and at City of Rialto Well No. 2 and Well No. 4.